



CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005



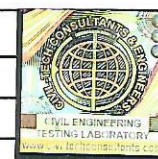
Job No.: CTCE/BBMP/W.No.08/KRIDL/WMM/AIV/2014-15

19.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager, KRIDL, Bangalore.
Name of the Work	Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.07.2014



Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	380	20.68
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	20.58	20.79	
	$100 * (W_2 / W_1) \%$			20.68

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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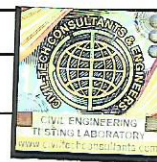


Job No.: CTCE/BBMP/W.No.08/KRIDL/WMM/S-T/2014-15

19.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager, KRIDL, Bangalore.
Name of Work	Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division,
Reference	AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.07.2014



Result : Flakiness Index = 12.89%

Elongation Index = 13.06%

Result : Combined Flakiness & Elongation index 25.95%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/AIV/2014-15

24.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager, KRIDL, Bangalore.
Name of the Work	Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	24.07.2014



Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	22.72
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	84.5	301	
4	Aggregate Impact value = percent fines $100 * (W_2 / W_1) \%$	22.62	22.82	

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Shape_T/2014-15

: 24.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: Technical Manager, KRIDL, Bangalore.
Name of Work	: Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	: AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 24.07.2014



Result : Flakiness Index = **11.08%**

Elongation Index = **13.28%**

Result : Combined Flakiness & Elongation index **24.36%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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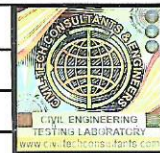
Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Stripping/2014-15

24.07.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager, KRIDL, Bangalore.
Name of the work	Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	24.07.2014



Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 90%.

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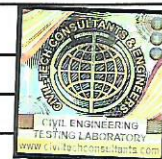
Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Sp_Wa/2014-15

24.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager, KRIDL, Bangalore.
Name of the Work	Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	24.07.2014



Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	$W_1 g$	2025	2023	2024	
2	Weight of basket suspended in water	$W_2 g$	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s g$	1270	1268	1269	
4	Weight of saturated surface dry aggregate in air	$W_3 g$	2017	2018	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_s) g$	747	750	751	
6	Weight of oven dried aggregate	$W_4 g$	2004	2005	2007	
7	Specific Gravity	$W_4 / (W_3 - W_s)$	2.683	2.673	2.672	2.676
8	Apparent Specific gravity	$W_4 / (W_4 - W_s)$	2.730	2.720	2.720	2.723
9	Water Absorption	$((W_3 - W_4) * 100) / W_4$	0.65%	0.65%	0.65%	0.65%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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19.08.2014

TEST REPORT ON CONCRETE CUBES

Client : **Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.**

Agency : **Technical Manager, KRIDL, Bangalore.**

Name of the work : **Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.**

Reference : **AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014**

Sample ID : **Drain Concrete**

Size of cubes : **150mmx150mmx150mm**

Cross Sectional Area : **22500 mm²**

Technical Reference : **IS: 516-1959 (Reaffirmed 2008)**

Grade of Concrete : **M₂₀**

Compressive Strength as on : **28th day**

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm ²)
1	22.07.2014	19.08.2014	8.138	475.5	21.13
2	22.07.2014	19.08.2014	8.297	490.6	21.80
3	22.07.2014	19.08.2014	8.358	502.1	22.32

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19.08.2014

TEST REPORT ON CONCRETE CUBES

Client : Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Agency : Technical Manager, KRIDL, Bangalore.

Name of the work : Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014

Sample ID : Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm²

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M₂₀

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm ²)
1	22.07.2014	19.08.2014	8.115	485.9	21.60
2	22.07.2014	19.08.2014	8.239	506.3	22.50
3	22.07.2014	19.08.2014	8.367	518.4	23.04

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Reference : AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014

Sample ID : Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm²

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

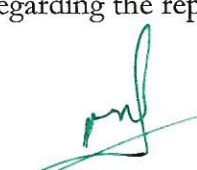
Grade of Concrete : M₁₅

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm ²)
1	23.07.2014	20.08.2014	8.125	352.6	15.67
2	23.07.2014	20.08.2014	8.260	364.5	16.20
3	23.07.2014	20.08.2014	8.325	372.3	16.55

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TEST REPORT ON CONCRETE CUBES

Client : Asst. Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Agency : Technical Manager, KRIDL, Bangalore.

Name of the work : Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014

Sample ID : Drain Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm²

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M₁₅

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm ²)
1	23.07.2014	20.08.2014	8.289	359.6	15.98
2	23.07.2014	20.08.2014	8.365	368.9	16.40
3	23.07.2014	20.08.2014	8.415	379.6	16.87

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Job No.: CTCE/BBMP/W.No.08/KRIDL/CC Blocks/2014-15

19.07.2014

TEST REPORT ON CEMENT CONCRETE BLOCKS

Client : **Asst. Executive Engineer**, Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager**, KRIDL, Bangalore.

Name of work : Improvements to Roads and Drains at Devinagar, Muneshwara Block, TATA Nagar and Kanuramma Temple in Ward No.08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/KG/(WO)/58/2014-15 Dated: 18.07.2014

Size of Block : 400 mm x 200 mm x 200 mm

Cross Sectional Area : 80000 mm²

Technical Reference : IS: 2185 (Part 1) - 2005

No. of Blocks Tested : 03



Sl.No.	Date of Sampling	Date of testing	Failure load (KN)	Compressive strength	Minimum Compressive Strength of Individual Units
			kN	N/mm ²	N/mm ²
1	17.07.2014	19.07.2014	262.3	3.28	3.2
2	17.07.2014	19.07.2014	260.5	3.26	
3	17.07.2014	19.07.2014	259.6	3.25	

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